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(b) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one amino acid insertion, wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 5;

(c) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one amino acid deletion, wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 5;

(d) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 5 which has a C- and/or N- terminal truncation, wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 5;

(e) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 5 with at least one modification that is a conservative amino acid substitution, an amino acid insertion, an amino acid deletion, C-terminal truncation, or N-terminal truncation, wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 5;

(f) a nucleotide sequence of any of (a) - (e) comprising a fragment of at least about 16 nucleotides;

(g) a nucleotide sequence which hybridizes under at least moderately stringent conditions to the complement of the nucleotide sequence of any of (a) - (f); and

(h) a nucleotide sequence complementary to the nucleotide sequence of any of (a) - (e).

REMARKS

The Examiner indicated that claims 1-8, 10, 11, and 43-45 were pending at the issuance of the instant Office Action. Claims 1-3 have been amended to recite only the species elected by telephone on August 13, 2001 and more clearly recite the claimed invention. The amendments to the claims are fully supported by the specification. No new matter has been added as a result of the above-described amendments. The rejections set forth in the Office Action have been overcome by amendment or are traversed by argument below.

1. Objection to the specification

The Office Action contains an objection to the specification as lacking the priority data. Applicants have amended the specification to recite the priority data.

2. Rejections of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 101

The Office Action asserts a rejection of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 101. The Examiner takes the position that the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility. Applicants traverse this rejection.

Applicants contend that the instant application contains an assertion of a specific and substantial utility for the claimed invention that would be credible to one of ordinary skill in the art. The instant application teaches rat IFN-L nucleotide sequences that share amino acid sequence homology with members of the interferon family of proteins (page 93, lines 15-18). The instant application also teaches human IFN-L nucleotide sequences that share the characteristic intronless structure of the interferon gene family (page 93, lines 23-27). Sequence analysis strongly indicated that the human and rat IFN-L polypeptides are secreted cytokines (page 95, lines 14-16) and that both share conserved cysteine residues with IFN- β (Figure 3). Nearly all of the related amino acid sequences identified in a BLAST search using the human IFN-L amino acid sequence (SEQ ID NO: 5) are members of the interferon family of proteins (Exhibit A). Based on the expression of human IFN-L mRNA in the pancreas, small intestine, prostate, uterus, thyroid, and placenta, described *inter alia*, at page 96, lines 6-8 of the specification, and the teaching of the instant specification that human IFN-L polypeptide has a phosphorylation activity (Example 5), one of ordinary skill in the art would recognize that the claimed molecules could be useful, for example, in modulating polypeptide phosphorylation in the pancreas, small intestine, prostate, uterus, thyroid, and placenta.

Exhibits B and C illustrate that the instantly-claimed human IFN-L polypeptide shares substantial amino acid sequence identity with the interferon molecules disclosed by Cao *et al.* (GenBank Accession No. AF146759, published May 4, 2000) and the NCBI Annotation Project (GenBank Accession No. XM_035950, first published October 16, 2001). Exhibit D illustrates that the instantly-claimed human IFN-L polypeptide shares substantial amino acid sequence identity with the interferon kappa polypeptide disclosed by LaFleur *et al.* (GenBank Accession No. AF384047, published October 23, 2001), which is selectively expressed in epidermal keratinocytes (LaFleur *et al.*, 2001, *J. Biol. Chem.* 276:39765-71). Applicants contend that based on the totality of the evidence of record, one of ordinary skill in the art would recognize that IFN-L is a member of the

interferon family of proteins. In fact, the references cited above indicate that those of ordinary skill in the art, absent Applicants' teaching, *have* recognized that the polypeptide set forth in SEQ ID NO: 5 is a member of the interferon family of proteins, albeit subsequent to Applicants' identification of this member of the interferon family (indeed, after Applicants' priority filing date of December 8, 1999). Moreover, as interferons have substantial real world use, Applicants contend that one of ordinary skill in the art would recognize that the claimed molecules have credible, specific, and substantial utility.

Applicants contend that because the instant application contains an assertion of a specific and substantial utility for the claimed invention credible to one of ordinary skill in the art, the rejection under 35 U.S.C. § 101 should be withdrawn.

3. Rejections of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 112, first paragraph

The Office Action asserts a rejection of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 112, first paragraph. The Examiner takes the position that because the claimed invention is not supported by either a specific or substantial asserted utility or a well-established utility, one skilled in the art would not know how to use the claimed invention. Applicants have set forth affirmative evidence that the asserted utility would be credible to one of ordinary skill in the art. Applicants contend that because the instant application contains an assertion of a specific and substantial utility for the claimed invention that one of ordinary skill in the art would find to be credible, this rejection should be withdrawn.

The Office Action also asserts a rejection of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 112, first paragraph, as not being enabling for variants, sequences identified by hybridization, and fragments of the nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO: 4. Based on the expression of human IFN-L mRNA in the pancreas, small intestine, prostate, uterus, thyroid, and placenta, and the teaching of the instant specification that human IFN-L polypeptide has a phosphorylation activity, Applicants contend that one of ordinary skill in the art would know how to make and use the claimed sequences or their variants or fragments. Applicants further contend that based on their recitation of a functional feature common to the claimed sequences or their variants or fragments (phosphorylation), and coupled with the teachings in the instant specification regarding

the preparation of IFN-L variants having conservative amino acid substitutions (page 23, lines 2-12) and examples of appropriate hybridization conditions for identifying IFN-L variants (*e.g.*, page 17, lines 7-10; page 18, lines 11-13), the identification of IFN-L variants or IFN-L fragments having an activity of the polypeptide set forth in SEQ ID NO: 5 would not require undue experimentation. Therefore, Applicants respectfully request that this rejection be withdrawn.

The Office Action also asserts a rejection of claims 1, 2, 4-8, 10, 11, and 43-45 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner takes the position that Applicants' referral to the deposit of PTA-976 in the specification and claims 1 and 2 is an insufficient assurance that all of the conditions of 37 C.F.R. §§ 1.801-1.809 have been met. The Examiner further takes the position that the specification must be amended to recite the date of deposit, the complete name and address of the depository, and the accession number of the deposited biological material. Applicants respectfully direct the Examiner's attention to page 92, lines 25-28 of the specification where Applicants disclose that a deposit of cDNA encoding human IFN-L polypeptide, subcloned into pSPORT1 (Gibco BRL) and transformed into *E. coli* strain DH10B, was made with the American Type Culture Collection (ATCC), 10801 University Boulevard, Manassas, VA 20110-2209, before the filing date of the instant application. Pursuant to the Examiner's request, Applicants also submit herewith a Declaration stating that deposits complying with 37 C.F.R. §§ 1.801-1.809 were made under the provisions of the Budapest Treaty. Applicants contend that all the requirements of 37 C.F.R. §§ 1.801-1.809 have been met. *In re Lundak*, 225 U.S.P.Q. 90 (Fed. Cir. 1985). Withdrawal of this rejection is therefore respectfully solicited.

The Office Action also asserts a rejection of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Examiner takes the position that the disclosure of two nucleic acid sequences does not adequately describe the scope of the claimed genus, which encompasses a substantial variety of subgenera. The Examiner notes that a description of a genus of cDNAs may be achieved by means of a recitation of a representative number of

cDNAs, defined by nucleotide sequence, falling within the scope of the genus *or* a recitation of structural *or* functional features common to the members of the genus.

Applicants recite at least one functional feature – phosphorylation activity – common to the members of each genus of claimed IFN-L polypeptide variants. The instant application teaches the nucleotide sequences and corresponding amino acid sequences for rat and human IFN-L polypeptide.

The instant application also teaches that conservative amino acid substitutions may be made in those portions of the IFN-L polypeptide that are not conserved among IFN-L orthologs (page 23, lines 2-12). Applicants therefore contend that a sufficient description of the genus of IFN-L nucleic acid molecules encoding a polypeptide having at least one conservative substitution and possessing an activity of the polypeptide set forth in SEQ ID NO: 5 has been provided. Applicants further contend that because the instant application teaches at least one functional feature common to the members of the genus of IFN-L polypeptide variants that are C- and/or N- terminal truncated and possess an activity of the polypeptide set forth in SEQ ID NO: 5, a sufficient description of that genus has been provided. Withdrawal of this rejection is therefore respectfully solicited.

4. Rejections of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 112, second paragraph

The Office Action asserts a rejection of claims 1-8, 10, 11, and 43-45 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner takes the position that claims 1-8, 10, 11, and 43-45 are indefinite because they encompass molecules identified by hybridization and hybridization conditions are not defined in the specification. Applicants note that the specification defines the meaning of the terms “moderately stringent conditions” (page 18, lines 8-14) and “highly stringent conditions” (page 17, lines 3-10), and provides examples of each. Therefore, Applicants contend that the claims are not indefinite for reciting the phrase “moderately stringent conditions,” and respectfully request withdrawal of this rejection.

The Examiner also takes the position that claims 2-8, 10, 11, and 46-48 are indefinite for reciting “an activity of the polypeptide.” Applicants contend that claims containing this limitation encompass only those nucleic acid molecules encoding IFN-L polypeptide variants that possess an inherent activity (phosphorylation) of the polypeptide set forth in SEQ ID NO: 5. Applicants teach

the expression of human IFN-L mRNA in the pancreas, small intestine, prostate, uterus, thyroid, and placenta. The expression of IFN-L polypeptides in these tissues indicates that IFN-L polypeptide has an inherent function. Moreover, Applicants teach that IFN-L polypeptide has a phosphorylation activity. In view of the inherency of activity that resides in polypeptides having the amino acid sequence as set forth in SEQ ID NO. 5, and teachings in the instant specification that IFN-L has a phosphorylation activity, Applicants respectfully contend that the term is not indefinite and that the claims fulfill the requirements of 35 U.S.C. § 112, second paragraph.

CONCLUSIONS

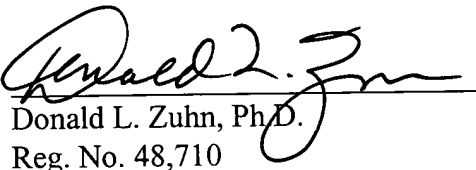
Applicants respectfully contend that all conditions of patentability are met in the pending claims as amended. Allowance of the claims is thereby respectfully solicited.

If Examiner Andres believes it to be helpful, she is invited to contact the undersigned representative by telephone at (312) 913-0001.

Respectfully submitted,
McDonnell Boenken Hulbert & Berghoff

Dated: February 25, 2002

By:


Donald L. Zuhn, Ph.D.
Reg. No. 48,710

AMENDMENTS TO THE CLAIMS

Marked Up Versions of Amended Claims under 37 C.F.R. 1.121(c)(1)(ii)

1. (Amended) An isolated nucleic acid molecule comprising ~~a nucleotide sequence selected from the group consisting of:~~

- (a) the nucleotide sequence as set forth in ~~either SEQ ID NO: 1 or~~ SEQ ID NO: 4;
- (b) the nucleotide sequence of the DNA insert in ATCC Deposit No. PTA-976;
- (c) a nucleotide sequence encoding the polypeptide as set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5;
- (d) a nucleotide sequence which hybridizes under at least moderately ~~or highly stringent~~ conditions to the complement of the nucleotide sequence of any of (a) - (c); and/or
- (e) a nucleotide sequence complementary to the nucleotide sequence of any of (a) - (c).

2. (Amended) An isolated nucleic acid molecule comprising ~~a nucleotide sequence selected from the group consisting of:~~

- (a) a nucleotide sequence encoding a polypeptide which is at least about 70 percent identical to the polypeptide as set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5, wherein the encoded polypeptide has an activity of the polypeptide set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5;
- (b) a nucleotide sequence encoding an allelic variant ~~or splice variant~~ of the nucleotide sequence as set forth in ~~either SEQ ID NO: 1 or~~ SEQ ID NO: 4, the nucleotide sequence of the DNA insert in ATCC Deposit No. PTA-976, or the nucleotide sequence of (a);
- (c) a region of the nucleotide sequence of ~~either SEQ ID NO: 1 or~~ SEQ ID NO: 4, the DNA insert in ATCC Deposit No. PTA-976, or the nucleotide sequence of (a), or (b) encoding a polypeptide fragment of at least about 25 amino acid residues, wherein the polypeptide fragment has an activity of the encoded polypeptide as set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5, or is antigenic;

(d) a region of the nucleotide sequence of ~~either SEQ ID NO: 1 or SEQ ID NO: 4, the~~ nucleotide sequence of the DNA insert in ATCC Deposit No. PTA-976, or the nucleotide sequence of any of (a) - (c) comprising a fragment of at least about 16 nucleotides;

(e) a nucleotide sequence which hybridizes under at least moderately ~~or highly~~ stringent conditions to the complement of the nucleotide sequence of any of (a) - (d); and/or

(f) a nucleotide sequence complementary to the nucleotide sequence of any of (a) - (d).

3. (Amended) An isolated nucleic acid molecule comprising ~~a nucleotide sequence selected from the group consisting of:~~

(a) a nucleotide sequence encoding a polypeptide as set forth in ~~either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one conservative amino acid substitution, wherein the encoded polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

(b) a nucleotide sequence encoding a polypeptide as set forth in ~~either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one amino acid insertion, wherein the encoded polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

(c) a nucleotide sequence encoding a polypeptide as set forth in ~~either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one amino acid deletion, wherein the encoded polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

(d) a nucleotide sequence encoding a polypeptide as set forth in ~~either SEQ ID NO: 2 or SEQ ID NO: 5 which has a C- and/or N- terminal truncation, wherein the encoded polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

(e) a nucleotide sequence encoding a polypeptide as set forth in ~~either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one modification selected from the group consisting of that is a conservative amino acid substitutions, an amino acid insertions, an amino acid deletions, C-terminal truncation, and/or N-terminal truncation, wherein the encoded polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

(f) a nucleotide sequence of any of (a) - (e) comprising a fragment of at least about 16 nucleotides;

(g) a nucleotide sequence which hybridizes under at least moderately or highly stringent conditions to the complement of the nucleotide sequence of any of (a) - (f); and

(h) a nucleotide sequence complementary to the nucleotide sequence of any of (a) - (e).

EXHIBIT A

Sequences producing significant alignments:	Score (bits)	E Value
gi 14738106 ref XP_035950.1 (XM_035950) interferon-like pr...	346	1e-94
gi 7688655 gb AAF67468.1 AF146759_1 (AF146759) interferon-l...	344	2e-94
gi 14488026 gb AAK63834.1 AF384047_1 (AF384047) interferon ...	290	6e-78
gi 10180639 gb AAG14168.1 (AF238611) interferon tau [Bos t...	90	1e-17
gi 6707758 sp P15696 INT1_BOVIN INTERFERON TAU-1 PRECURSOR ...	87	9e-17
gi 136022 sp P15695 TP12_BOVIN TROPHOBLAST PROTEIN-1 PRECUR...	86	2e-16
gi 163765 gb AAA50457.1 (M31556) trophoblast protein-1 [Bo...	86	2e-16
gi 108956 pir S23751 trophoblast interferon type I precurs...	86	2e-16
gi 108954 pir A39505 trophoblast interferon 4 precursor (c...	86	3e-16
gi 6446549 gb AAF08677.1 AF196326_1 (AF196326) interferon-t...	85	4e-16
gi 108953 pir B39505 trophoblast protein-1 precursor (clon...	85	4e-16
gi 625506 pir A61403 interferon alpha-II-10 precursor - sheep	85	5e-16
gi 108955 pir A40068 trophoblast protein-1 precursor (clon...	85	5e-16
gi 6707696 sp P56831 INT3_BOVIN INTERFERON TAU-3 (IFN-TAU3)...	85	5e-16
gi 6446547 gb AAF08676.1 AF196325_1 (AF196325) interferon-t...	85	5e-16
gi 627779 pir A61578 trophoblast protein 1 (clone SPW49) -...	85	6e-16
gi 6446551 gb AAF08678.1 AF196327_1 (AF196327) interferon-t...	84	6e-16
gi 6707700 sp Q08071 INT7_SHEEP INTERFERON TAU-7 PRECURSOR ...	84	8e-16
gi 14140244 ref NP_114482.1 (NM_032093) pregnancy-associat...	84	8e-16
gi 6513855 gb AAF08671.2 AF196320_1 (AF196320) interferon-t...	84	1e-15
gi 124498 sp P07352 INO1_BOVIN Interferon omega-1 precursor...	84	1e-15
gi 8347785 gb AAF74783.1 AF270471_1 (AF270471) interferon-t...	84	1e-15
gi 2136874 pir I46397 interferon alpha - sheep >gi 416542 ...	83	2e-15
gi 6707689 sp O46633 INT_CEREL INTERFERON TAU PRECURSOR (IF...	83	2e-15
gi 6707704 sp Q29429 INT6_SHEEP Interferon tau-6 precursor ...	83	2e-15
gi 6707703 sp Q28595 INT5_SHEEP INTERFERON TAU-5 PRECURSOR ...	83	2e-15
gi 6446543 gb AAF08674.1 AF196323_1 (AF196323) interferon-t...	83	2e-15
gi 6707695 sp P56830 INT2_BOVIN INTERFERON TAU-2 (IFN-TAU2)...	82	2e-15
gi 6707702 sp Q28594 INT4_SHEEP INTERFERON TAU-4 PRECURSOR ...	82	3e-15
gi 2118659 pir I47070 interferon omega - sheep >gi 165829 ...	82	3e-15
gi 6446541 gb AAF08673.1 AF196322_1 (AF196322) interferon-t...	82	3e-15
gi 6707755 sp P56828 INT1_SHEEP INTERFERON TAU-1 PRECURSOR ...	82	3e-15
gi 6707759 sp P56829 INT2_SHEEP INTERFERON TAU-2 PRECURSOR ...	82	3e-15
gi 4504605 ref NP_002168.1 (NM_002177) interferon, omega 1...	82	4e-15
gi 89874 pir JS0204 trophoblast interferon alpha precursor...	82	4e-15
gi 6707692 sp P28172 INT_OVIMO INTERFERON TAU PRECURSOR (IF...	82	4e-15
gi 5532999 gb AAD44974.1 AF158822_1 (AF158822) interferon-t...	82	5e-15
gi 5532997 gb AAD44973.1 AF158821_1 (AF158821) interferon-t...	82	5e-15
gi 6707699 sp Q08070 INT9_SHEEP INTERFERON TAU-9 PRECURSOR ...	82	5e-15
gi 5533001 gb AAD44975.1 AF158823_1 (AF158823) interferon-t...	81	6e-15
gi 6707701 sp Q08072 INT8_SHEEP INTERFERON TAU-8 PRECURSOR ...	81	6e-15
gi 5107464 pdb 1B5L Ovine Interferon Tau	81	7e-15
gi 5532991 gb AAD44970.1 AF158818_1 (AF158818) interferon-t...	81	7e-15
gi 5532995 gb AAD44972.1 AF158820_1 (AF158820) interferon-t...	81	7e-15
gi 6707697 sp P56832 INT3_SHEEP INTERFERON TAU-3 (IFN-TAU3)...	80	1e-14
gi 1708490 sp P49876 INAF_BOVIN INTERFERON ALPHA-F PRECURSO...	80	2e-14
gi 124430 sp P07348 INAF_BOVIN INTERFERON ALPHA-1 PRECURSOR...	80	2e-14
gi 108329 pir S23711 interferon alpha-II-5 precursor - pig...	79	2e-14
gi 758083 emb CAA26501.1 (X02669) human interferon omega p...	79	2e-14
gi 386800 gb AAA52724.1 (M11003) interferon-alpha [Homo sa...	79	4e-14
gi 6707694 sp P28169 INTB_SHEEP INTERFERON TAU-11 PRECURSOR...	78	5e-14
gi 847816 gb AAA70091.1 (U25670) interferon omega-1 [Homo ...	78	7e-14
gi 478668 pir S23710 interferon alpha-II-4 precursor - pig...	77	7e-14
gi 10180643 gb AAG14170.1 (AF238613) interferon tau [Bos t...	77	8e-14
gi 5532993 gb AAD44971.1 AF158819_1 (AF158819) interferon-t...	77	8e-14
gi 124450 sp P05008 INAB_BOVIN INTERFERON ALPHA-B PRECURSOR...	77	9e-14
gi 6707691 sp P28171 INT_CAPHI INTERFERON TAU PRECURSOR (IF...	77	9e-14
gi 6707698 sp Q08053 INTA_SHEEP INTERFERON TAU-10 PRECURSOR...	77	9e-14

gi 124454 sp P05010 INAD_BOVIN INTERFERON ALPHA-D PRECURSOR...	77	1e-13
gi 2118657 pir I47098 trophoblast protein-1 - sheep >gi 16...	77	1e-13
gi 4504603 ref NP_002167.1 (NM_002176) interferon, beta 1,...	77	1e-13
gi 6707693 sp Q95187 INT GIRCA INTERFERON TAU PRECURSOR (IF...	76	2e-13
gi 13640606 ref XP_005506.3 (XM_005506) interferon, alpha ...	75	3e-13
gi 1708492 sp P49878 INAH_BOVIN INTERFERON ALPHA-H PRECURSO...	75	4e-13
gi 124434 sp P05004 INA2_HORSE INTERFERON ALPHA-2 PRECURSOR...	75	4e-13
gi 69659 pir IVHUA9 interferon alpha-17 precursor - human ...	75	5e-13
gi 1708491 sp P49877 INAG_BOVIN INTERFERON ALPHA-G PRECURSO...	74	6e-13
gi 10880985 ref NP_067091.1 (NM_021268) interferon, alpha ...	74	7e-13
gi 3766295 emb CAA09862.1 (AJ011909) interferon beta [Maca...	74	7e-13
gi 4504591 ref NP_002163.1 (NM_002172) interferon, alpha 1...	74	7e-13
gi 124499 sp P05001 INO1_HORSE INTERFERON OMEGA-1 PRECURSOR...	74	8e-13
gi 2118648 pir I37584 IFN-alpha-N-protein - human >gi 3272...	74	9e-13
gi 17451041 ref XP_071048.1 (XM_071048) similar to interfe...	74	9e-13
gi 7558588 gb AAC60525.2 (S68999) interferon-omega48; IFN-...	74	1e-12
gi 124452 sp P05009 INAC_BOVIN INTERFERON ALPHA-C PRECURSOR...	73	2e-12
gi 124447 sp P05007 INAA_BOVIN INTERFERON ALPHA-A PRECURSOR...	73	2e-12
gi 2118660 pir I51970 interferon precursor - human >gi 186...	72	2e-12
gi 124431 sp P05003 INA1_HORSE INTERFERON ALPHA-1 PRECURSOR...	72	3e-12
gi 2118661 pir I56314 interferon-alpha - human (fragment) ...	72	3e-12
gi 124437 sp P05006 INA4_HORSE INTERFERON ALPHA-4 PRECURSOR...	72	3e-12
gi 124436 sp P05005 INA3_HORSE INTERFERON ALPHA-3 PRECURSOR...	72	3e-12
gi 1247610 pir I46972 interferon-omega44 - rabbit >gi 5451...	72	4e-12
gi 4504593 ref NP_002164.1 (NM_002173) interferon, alpha 1...	72	4e-12
gi 2136876 pir S70011 interferon type I precursor - sheep ...	72	5e-12
gi 108328 pir S23712 interferon alpha-II-3 precursor - pig...	71	6e-12
gi 1708489 sp P49879 INAI_PIG INTERFERON ALPHA-1 PRECURSOR ...	71	7e-12
gi 2136875 pir I46398 interferon alpha - sheep >gi 1197 em...	71	7e-12
gi 184623 gb AAC41702.1 (M25460) interferon-beta [Homo sap...	71	8e-12
gi 2147611 pir I46974 interferon-omega45 - rabbit >gi 5451...	71	9e-12
gi 14715255 emb CAC44125.1 (AJ250196) interferon-alpha [Sa...	70	1e-11
gi 1679798 gb AAB19230.1 (U77908) interferon alpha [Odoci...	70	1e-11
gi 5381301 gb AAD42931.1 (AF085804) IFN-alpha 21a/IFN-alph...	70	1e-11
gi 2147609 pir I46975 interferon-omega20 - rabbit >gi 5451...	70	1e-11
gi 4504589 ref NP_002162.1 (NM_002171) interferon, alpha 1...	70	1e-11
gi 14715253 emb CAC44124.1 (AJ250195) interferon-alpha [Sa...	70	1e-11
gi 124502 sp P05002 INO2_HORSE INTERFERON OMEGA-2 PRECURSOR...	70	2e-11
gi 6754296 ref NP_034635.1 (NM_010505) interferon alpha fa...	70	2e-11
gi 17451073 ref XP_027565.2 (XM_027565) similar to interfe...	70	2e-11
gi 12734754 ref XP_011766.1 (XM_011766) interferon, alpha ...	70	2e-11
gi 6754290 ref NP_034632.1 (NM_010502) interferon alpha fa...	69	2e-11

EXHIBIT B

	10	20	30	40	50	60
	*	*	*	*	*	*
AF146759	MSTKPDMIQK	CLWLEILMGI	FIAGTSLDC	NLLNVHLRRV	TWQNLRLHSS	MSNSFPVECL>
IFN-L	MSTKPDMIQK	CLWLEILMGI	FIAGTSLDC	NLLNVHLRRV	TWQNLRLHSS	MSNSFPVECL

	70	80	90	100	110	120
	*	*	*	*	*	*
AF146759	RENIAFELPQ	EFLQYTQPMK	RDIKKAFYEM	SLQAFNIFSQ	HTFKYWKERH	LKQIQIGLDQ>
IFN-L	RENIAFELPQ	EFLQYTQPMK	RDIKKAFYEM	SLQAFNIFSQ	HTFKYWKERH	LKQIQIGLDQ

	130	140	150	160	170	180
	*	*	*	*	*	*
AF146759	QAEYLNQCLE	EDENENEDMK	EMKENEMKPS	EARVPQLSSL	ELRRYFHRID	NFLKEKKYSD>
IFN-L	QAEYLNQCLE	EDENENEDMK	EMKENEMKPS	EARVPQLSSL	ELRRYFHRID	NFLKEKKYSD

	190	200
	*	*
AF146759	CAWEIVRVEI	RRCLYYFYKF TALFRRK>
IFN-L	CAWEIVRVEI	RRCLYYFYKF TALFRRK

EXHIBIT C

	10	20	30	40	50	60
	*	*	*	*	*	*
XM_035950	MSTKPDMIQK	CLWLEILMGI	FIAGTSLDC	NLLNVHLRRV	TWQNLRLHSS	MSNSFPVECL>
IFN-L	MSTKPDMIQK	CLWLEILMGI	FIAGTSLDC	NLLNVHLRRV	TWQNLRLHSS	MSNSFPVECL

	70	80	90	100	110	120
	*	*	*	*	*	*
XM_035950	RENIAFELPQ	EFLQYTQPMK	TDIKKAFYEM	SLQAFNIFSQ	HTFKYWKERH	LKQIQIGLDQ>
IFN-L	RENIAFELPQ	EFLQYTQPMK	TDIKKAFYEM	SLQAFNIFSQ	HTFKYWKERH	LKQIQIGLDQ

	130	140	150	160	170	180
	*	*	*	*	*	*
XM_035950	QAEYLNQCLE	EDkNENEDMK	EMKENEMKPS	EARVPQLSSL	ELRRYFHRID	NFLKEKKYSD>
I IFN-L	QAEYLNQCLE	EDENENEDMK	EMKENEMKPS	EARVPQLSSL	ELRRYFHRID	NFLKEKKYSD

	190	200
	*	*
XM_035950	CAWEIVRVEI	RRCLYYFYKF TALFRRK>
IFN-L	CAWEIVRVEI	RRCLYYFYKF TALFRRK

EXHIBIT D

	10	20	30	40	50	60
	*	*	*	*	*	*
AF38047			mLDC	NLLNVHLRRV	TWQNLRLHLS	MSNSFPVECL>
IFN-L	MSTKPDMIQK	CLWLEILMGI	FIAGTSLSDC	NLLNVHLRRV	TWQNLRLHLS	MSNSFPVECL

	70	80	90	100	110	120
	*	*	*	*	*	*
AF38047	RENIAFELPQ	EFLQYTQPMK	RIKKAFYEM	SLQAFNIFSQ	HTFKYWKERH	LKQIQIGLDQ>
IFN-L	RENIAFELPQ	EFLQYTQPMK	RIKKAFYEM	SLQAFNIFSQ	HTFKYWKERH	LKQIQIGLDQ

	130	140	150	160	170	180
	*	*	*	*	*	*
AF38047	QAEYLNQCLE	EDENENEDMK	EMKENEMKPS	EARVPQLSSL	ELRRYFHRID	NFLKEKKYS>
IFN-L	QAEYLNQCLE	EDENENEDMK	EMKENEMKPS	EARVPQLSSL	ELRRYFHRID	NFLKEKKYS

	190	200
	*	*
AF38047	CAWEIVRVEI	RRCLYYFYKF TALFRR>
IFN-L	CAWEIVRVEI	RRCLYYFYKF TALFRR